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however, by my example of the organism transparent to solids that although it is the same world that is mapped or from which selections are made, the mapping or the selecting could be made from such different points of view that, to differently constituted organisms, one selection might be of value and the other not. The plant and the river are in the same world, but if each had a science that mapped that world from the point of view implied by its activities, I think it might be a little difficult, although it is not inconceivable, for each to understand the other's map.

I do not believe that Professor Woodbridge will be in any deep disagreement with these explanations and my only reason for supplementing his remarks is that it is a question of making clear a certain type of metaphysical analysis in which we both believe profoundly, whether or not we shall be able to bring our conclusions together now or in the future.

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ON THE FUNCTION OF VISUAL IMAGERY AND ITS MEASUREMENT FROM INDIVIDUAL REPORTS

SOME years ago in this JOURNAL I presented evidence that individuals who reported themselves as capable of calling up clear and vivid imagery or objects did not differ appreciably in the accuracy of their judgments of numbers or magnitudes from memory, from individuals reporting little or no power to call up clear and vivid images.

It is of some interest to know whether the same holds good when the judgments are of *relative* magnitude or proportion; and I have recently secured data on this point, by the following method: Students of Teachers College and Barnard College who had estimated their imagery of their breakfast-tables and of an often-seen face were requested to tell what per cent. the length of Schermerhorn Hall is of the total 120th-Street width of the Columbia University campus. The question was made entirely clear, and the students were encouraged to imagine themselves as standing on 120th Street facing the campus, and to picture the building in question as it stands so as to be able to see how much of the campus's width its length took up in their visual image of it.

The results for the 115 reported "best" visualizers and the 122 reported worst visualizers, representing roughly the top and bottom thirds as reported, were as follows:

Frequency of Each Degree of Error

Error	The Best Visualizers as per Report	The Worst Visualizers as per Report
0	1	1
1	1	1
2	33	26
3	1	8
4	0	1
5	1	2
6	14	7
7	28	23
8	1	1
9	2	3
10	0	6
Over 10	33	43

There is thus only a very slight advantage in favor of the top third in visualization. Also it is possible that the nature of the instructions, which emphasized the use of the image as a basis of judgment, may have been to the disadvantage of those who could summon no clear or stable image of the campus front containing the building. Had the question been put without any suggestion as to picturing the facts in the mind's eye, even the small apparent advantage to the good visualizers might have been absent.

It is also of interest to discover whether small details and relative positions in space are kept in brief memory better by alleged good visualizers. Betts found little or no advantage. The experiment to be reported here concerns the speed and accuracy of mental multiplication of a three-place by a two-place number, four such examples being done, in response to the following instructions:

Record a time in minutes and seconds at which you will start to multiply mentally in the examples below. Cover them until that time. Then uncover them and multiply *mentally,* writing down *nothing* whatever until you have the *entire answer.* That is, you must keep the partial products in memory and add them from memory, doing all the work for an example mentally till you have the entire answer. Then write it down. Then start at once with the second example, doing it in precisely the same manner; and then the third and fourth. When the answer to the fourth is obtained and written, record the time.

246	729	379	647
93	68	82	79

Classifying the individuals according to their reports of the clearness and vividness of their images of breakfast-table and often-seen face as before, we have the following results:

For the best visualizers (those reporting themselves as 1, 1, or 1, 2, or 2, 1, or 2, 2, or 1, 3, or 3, 1 in visual imagery), a median time of 480 seconds with 5 as the median number of mistakes.

For the worst visualizers (those reporting themselves as 4, 4 or 3, 5 or 5, 3 . . . to 7, 7 in visual imagery), a median time of 500 seconds with 6 as the median number of errors.

In so far as it is desirable to define and measure reported powers of visualization it is useful to know how many often-seen objects a person should report on in order that his report may give substantially as good information as his report on an infinitely long list of such objects. I have made the necessary computations to determine this on the basis of the responses of 368 college students to the following instructions:

Consider your own visual image of your breakfast-table and of the face of some one you know well. Rank yourself on a scale from 1 to 7 for the clearness and fidelity (that is, perfectness of representation of the thing imaged), of your visual images in these cases, letting 1 mean that the pictures in your mind's eye are as clear as the things themselves and are absolutely faithful copies. Let 7 mean that you can get no mental pictures of the things at all.

Let 2, 3, 4, 5, and 6 be degrees of clearness and fidelity that are between 1 and 7, 4 being half-way between 1 and 7, and the differences between 1 and 2, 2 and 3, 3 and 4, 4 and 5, 5 and 6, and 6 and 7 being equal.

The correlation table resulting is as shown below. The coefficient

CORRELATION BETWEEN REPORTED VISUAL IMAGERY OF THE BREAKFAST-TABLE AND REPORTED VISUAL IMAGERY OF A FAMILIAR FACE

Breakfast-Table

Breakfast-Table →

Familiar Face ↓	1	2	3	4	5	6	7	
1	44	43	12	1				100
2	18	42	38	10	3		1	112
3	7	16	18	13	5			59
4	2	7	8	6	5	7		36
5	2	3	6	13	2	5	1	32
6			2	4	8	6		20
7				1	1	6	1	9
	73	111	84	48	25	24	3	

by the Spearman foot rule transmuted into terms of a Pearson coefficient is .7. By applying the formula of Brown,

$$r_n = \frac{nr_1}{1 + (n - 1)r_1},$$

it is found that reports on ten objects will give practically as good a result as an infinite number of reports (r being .96 for the result from one set of such ten with another set of ten).

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REVIEWS AND ABSTRACTS OF LITERATURE

Democracy and Education. JOHN DEWEY. New York: The Macmillan Company. Pp. xii + 434.

Ever since the hunting, that Plato said all philosophizing is, began, there have been two opinions as to its value. Though it has been the chosen pursuit of a few, a part of mankind, and never a small part, has persisted in regarding it as useless wordiness. But a far more serious misfortune which has attended it almost from the first has been the contrariety of opinion which has obtained among the hunters themselves as to what it is they are hunting. Socrates and Plato had a consistent programme; knowledge was all of one kind to them. They were hunting for a way to live, not merely a way to think. Knowledge therefore took on a fateful significance to them. Without it one could not cultivate the olive, or steer a ship, or examine his own life, or bring up his children, or serve the commonwealth. But when Aristotle came with his confusion-breeding distinction between knowing for the sake of knowing and knowing for the sake of doing, he set theory against practise and took away strength and dignity from both knowing and doing.

Since that unfortunate time philosophy has for the most part been a subject-matter of great abstractness, professing to be concerned with the ultimate nature of reality, whatever that may mean, rather than a hunting down of the difficulties of our common life and a persistent effort to find ways of dealing with them. Its search for knowledge wholly unmixed with volition has made, of what was in its beginning a very human enterprise, an exceedingly elaborate technique of distinctions, the manipulation of which, having virtue in itself, is generally regarded as the exclusive function of a specialized fraternity. The vaunted intellectual knowledge to which they